

# Tool Tutorial

Link to PDF Tool Tutorial: [letter size walking foot 2025.pdf](#)

Link to PDF Tool Poster:

**TODO: factor out content shared with Industrial Straight Stitch**

This machine is intended for use on heavy materials like vinyl, leather and heavy layers of upholstery. The stepping feeding motion promises the consistent feeding of multiple layers or heavy duty materials without stitch gathering or layer unevenness.

Maximum sewing speed is 3,000 stitches per minute!

## Warnings

☐ Do not push or pull material while stitching.

⚠ Power off the machine before threading, inserting the bobbin, or handling the needle.

⚠ This machine retains some power in the motor after powering off. Drain it by pressing the foot pedal while keeping hands away from the machine.

⚠ Keep hair, loose clothing, and fingers away from all moving parts!

See the Common Hazards section for more information.

## MACHINE ANATOMY

machine overview

1. **Bobbin Winding parts** - pre-tension bar, tension, and winder
2. **Hand Wheel** - Manually advances the machine (turns downwards only)
3. **Reverse Lever** - to allow back-stitching at the end of seams
4. **Stitch Length Selector** - Adjusts size of stitch
5. **Safety Clutch** - Release button for safety lock out mechanism
6. **Tensioner** - keeps stitches even
7. **Check Spring** - Keeps the thread taught as the take-up lever moves.(Do Not Adjust!)
8. **Walking Presser Foot** - Holds material down to the bed while sewing
9. **Feed Dog Mechanism** - Moves with presser foot to feed material
10. **Bobbin Hatch Cover**
11. **Needle**

12. **Manual Presser Foot Lifter** (back of machine head)

13. **Thread Take-up lever** - part of the thread feeding mechanism that pulls thread off the spool

14. **Flat 4-hole Thread Guide and 2-hole Thread Guide**

# Tool Safety

## COMMON HAZARDS

The most common hazards are thread jams and broken needles. Watch for binds and jams —stop immediately if they occur.

- This machine has a safety mechanism to avoid jamming. It must be reset after a jam before continuing. (See Safety Reset)
- Ensure the needle and thread are removed before winding a bobbin
- Avoid pulling/pushing fabric, which may misalign and break the needle

The most **significant hazard** is injury. Always power off and run the machine until the motor drains before handling, adjusting, or threading.

- Keep fingers 3” away from the needle
- Power off and drain the motor before:
  - Threading
  - Replacing needles
  - Removing jams
- Tie back hair and scarves
- Tuck sleeves behind elbows

## PROHIBITED MATERIALS

Thread jams and needle breakage are critical concerns. Material that is too thick or rigid will lead to needle breakage.

Industrial machines **will not “step over” pins** in the fabric. Hitting one will break the needle and send broken parts into the hook below.

For those reasons, it is important to avoid:

- Pins in the fabric
- Abrasives

- Paper and cardboard products
- Plastics
- Rigid Material (non-fabric)

## Initial Setup

Wipe down the machine and bed to clean up any oil or dust. Power on the machine. Ensure safety is not engaged, if the machine seems to be jammed, see [Troubleshooting](#). Wind the bobbin. Power off the machine to insert the bobbin and thread the machine. Ensure the needle is usable and appropriate for the material and thread. Set the needle position. Begin operation.

## NEEDLE ANATOMY

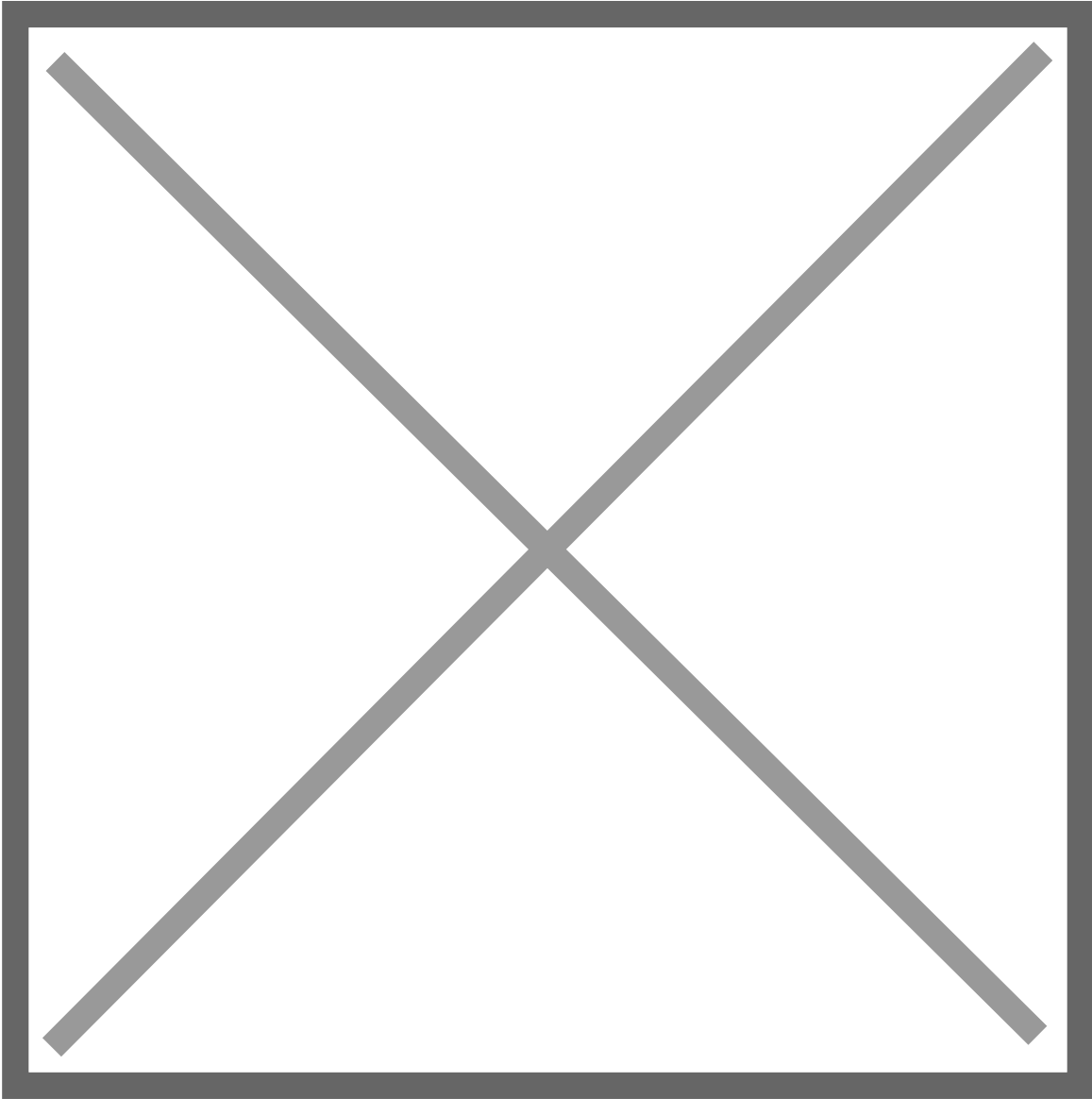
industrial\_walking\_foot\_image5.jpg

### CHECKING NEEDLE SIZE

1. Grab a needle and about 12 inches of the intended thread
2. Thread the needle
3. Hold both ends of the thread, creating a 60 degree slope with one end to see if the needle is able to slide along the slope
4. Reverse the process to see if the needle slides back

If the needle does not freely slide down the thread, the size may be too small. As a general rule, you'll want the smallest size needle that will slide freely down the thread.

## WIND THE BOBBIN (Size M available in the Protohaven store)



**Caution :** Be sure all object are off the table! The needle does not dis-engage like a consumer machine. It is preferable to remove the needle to avoid injury.

1. Check the bobbin housing for lint, brush it out if necessary.
2. Pass the thread in order of (1) through (4)
3. Lift the manual presser foot lever to raise the presser foot.
4. Gently push the foot pedal until the bobbin is full—it shuts off automatically.

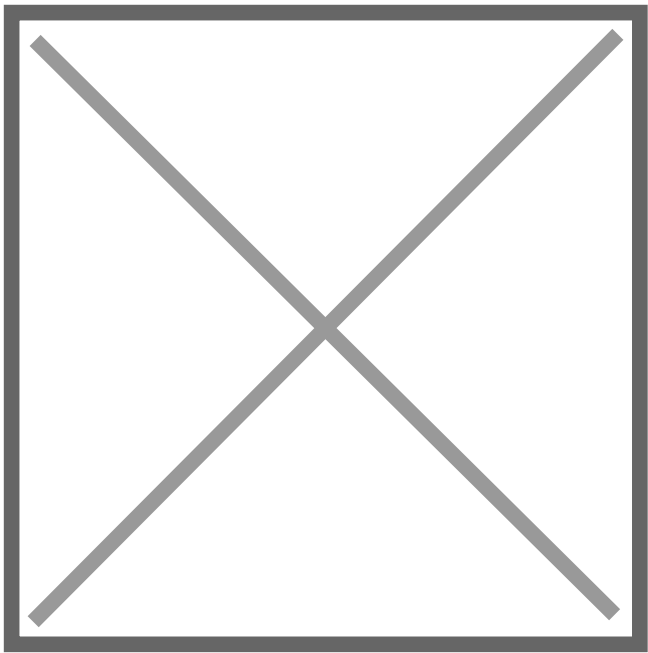
Please Note: If the bobbin is lop-sided, it can be used with caution, although it can affect tension.

## WINDING THE BOBBIN WHILE SEWING

For large projects, a second bobbin can be wound while sewing.


1. A second spool of thread is required.
2. The needle and presser foot remain in place
3. Follow all other instructions in "Bobbin Winding" above

## ATTACH BOBBIN CASE

	<p>Set the bobbin into the bobbin case.</p> <p>Pass the thread around the thread slit (1), and pass it under the tension spring (2)</p> <p>Adjust so that the bobbin rotates in direction B when thread is pulled in direction A</p>
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<p>industrial_walking_foot_image19.jpg</p>	<p>Orient the lower knob (1) of the bobbin case to the indented part (2) of the bobbin housing's inner hook.</p> <p>Push the bobbin case until it clicks.</p>
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## INSERT NEEDLE

	<p>Turn the handwheel forward until the needle bar is at the highest position</p> <ul style="list-style-type: none"> <li>- Loosen the needle clamp screw and hold the needle so that scarf is to the right and the long groove in the needle is exactly to the left.</li> <li>- Insert the needle (1) into the clamp hole until it will go no further.</li> <li>- Tighten the needle clamp screw firmly (monkey tight—not gorilla!)</li> </ul>
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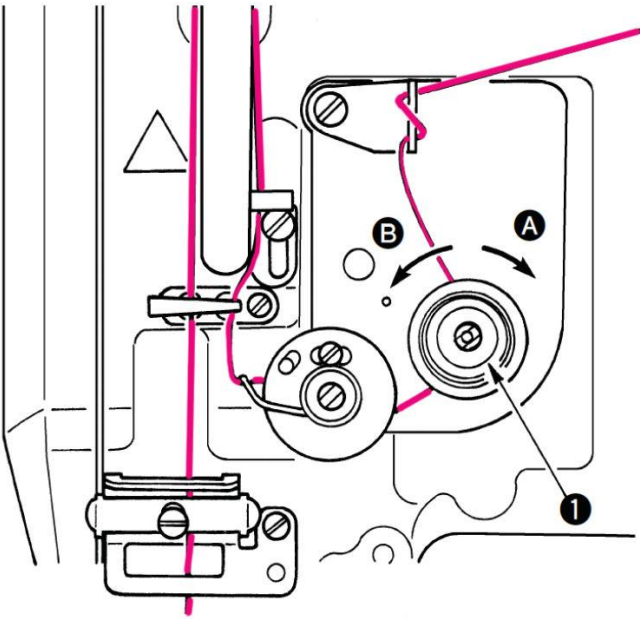
# THREAD THE MACHINE

industrial\_walking\_foot\_image21.jpg

Thread the machine following the order of (1) through (13) as shown above.

Move the handwheel towards you, never away to get the top thread to take up the bobbin thread.

## CRITICAL THREADING DETAILS

	<p>industrial_walking_foot_image12.jpg</p>
<p>Ensure the presser foot is UP.</p> <p>While holding the thread taught on either side, pass the thread between the tension discs, between the spring guide, and above the spring.</p> <p><b>Insert "check spring click" photo here</b></p> <p>You will hear a light click as the thread crosses over a small hook on the inside of the disc. (just visible through the hole next to the spring)</p>	<p>Please Note: Do not adjust the check spring knob (#6)!</p> <p>Its function is to keep the thread taught while the take up arm moves to the highest position. Loosening the nut will disable the spring, causing the machine to come unthreaded or tangle while sewing.</p> <p>This spring should always have enough tension to pull the thread down.</p>

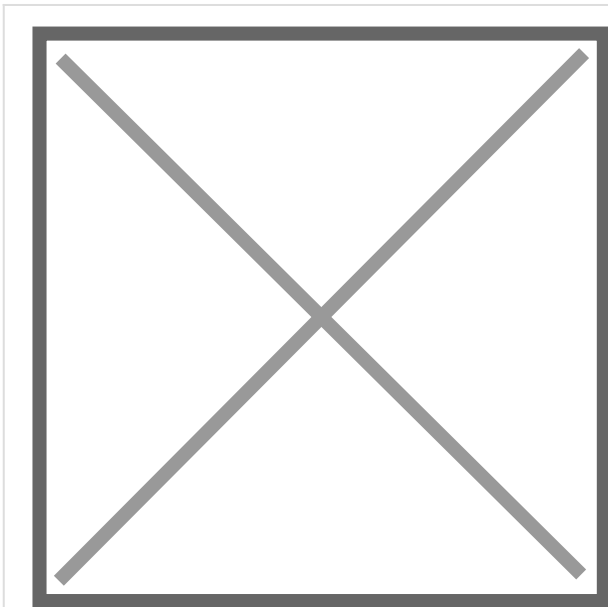


Down through and under the next two guides and the bottom slot, then through the hole above the needle.

Thread the needle left to right:

## Basic Operation

### CONTROL PANEL



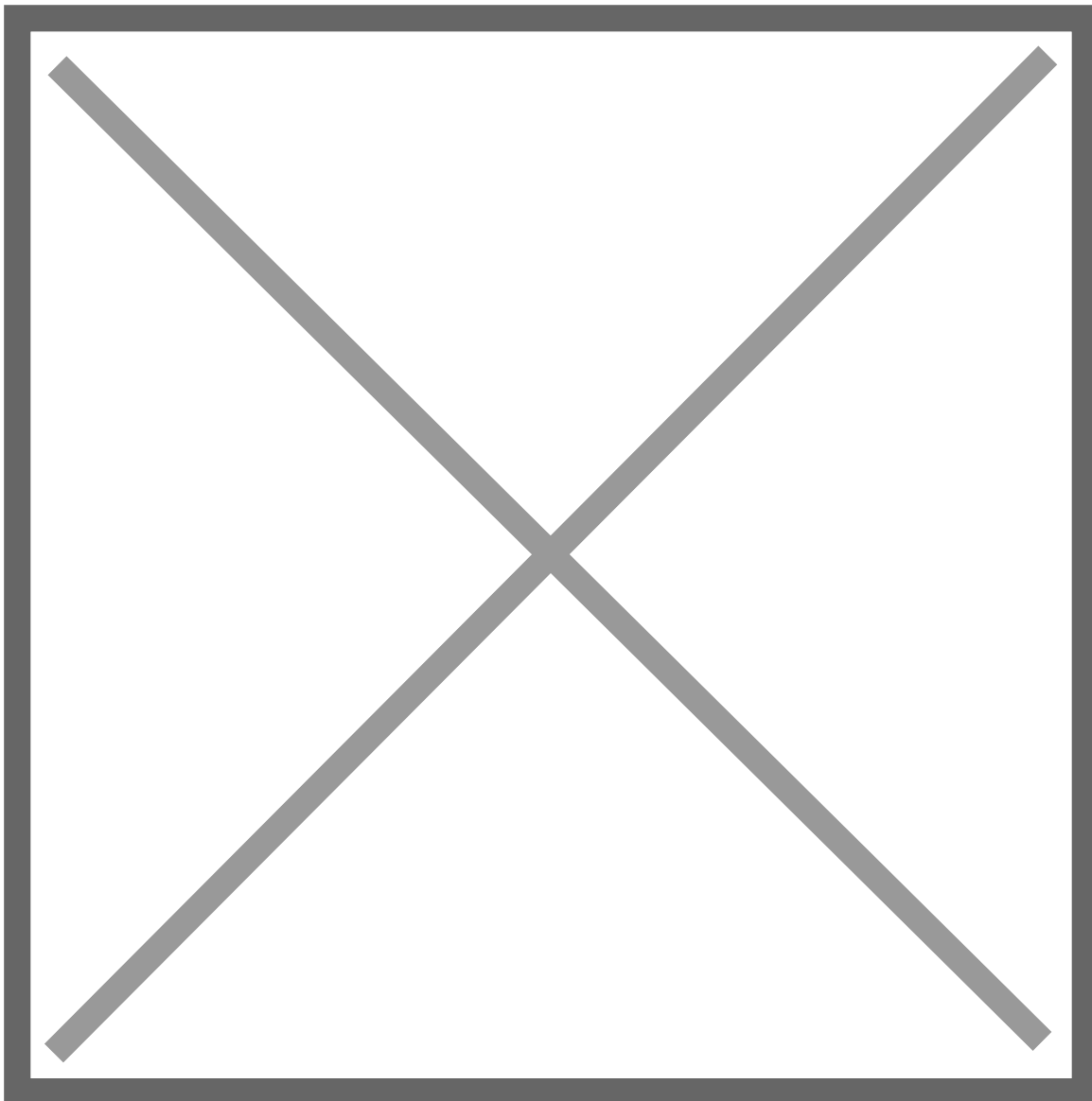
1. On/Off Switch: Main power to the machine
2. Increase Speed: Increase r.p.m.
3. Decrease Speed: Decrease r.p.m.
4. Needle Position Mode: Set the needle to up / down position
5. Rotation: FOR AUTHORIZED MAINTENANCE ONLY

# SETTING THE NEEDLE POSITION

Setting the needle position allows you to control whether the needle will finish a stitch engaged in your fabric or not. A light press and release of the foot pedal will move the needle exactly one stitch forward, ending the needle in the desired position setting.

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# ADJUSTING THE TENSION



To increase the tension, turn the tension nut (1) clockwise (A). To reduce the tension, turn the tension nut (1) to the counterclockwise (B).

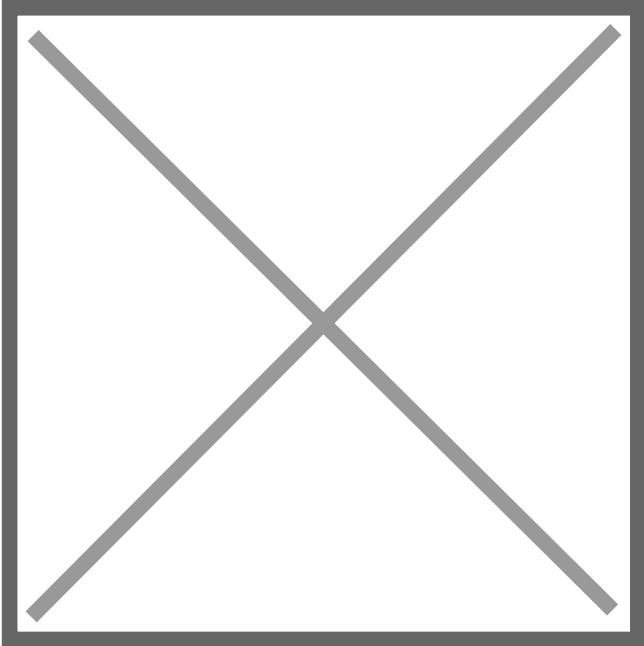
021Q5D0101(D)(EN.ES.FR).cdr	021Q5D0101(D)(EN.ES.FR).cdr	021Q5D0101(D)(EN.ES.FR).cdr
Normal tension for straight stitch sewing.	Too loose for straight stitch sewing.	Turn the dial clockwise to increase tension.

## BACK STITCH/REVERSE SEWING

industrial_walking_foot_image15.jpg	Press down the reverse feed control lever (1). Release the lever and the machine will run in the normal feed direction
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## SAFETY RESET

This machine has a safety to protect the mechanism from damage during a jam. The handwheel will be frozen, and the hook will not rotate around the bobbin.

	<ol style="list-style-type: none"> <li>1. Cut away the knot near the needle, remove the fabric.</li> <li>2. Open the bobbin housing and remove any stray thread, be sure the bobbin is not stuck.</li> <li>3. Press in the safety button (1) and turn the hand wheel away from you till it clicks, and the button pops up.</li> <li>4. Turn the wheel towards you. You may hear another click. Continue turning till the take-up lever is at its highest position.</li> <li>5. Re-thread and continue sewing.</li> </ol>
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## Cleanup

1. Power off and drain the machine
2. Unthread machine head and spool

3. Remove bobbin
4. Wipe down, vacuum, and brush out lint and stray clippings
5. Sweep up threads, lint, and debris and deposit in waste bins
6. Return checkout kit

## Maintenance Requests

- Notify a tech and record issues at <http://protohaven.org/maintenance>. This informs our staff and volunteer maintenance crew of any issues.

## Troubleshooting

Common Issues	Possible Causes	Resolutions	
Machine stops working after a jam—the hand wheel will not turn, or the hook does not rotate around the bobbin.	The safety mechanism has locked the hook.	Power off and drain the machine. (see Safety Reset above)  Remove the jam near the needle and below, inside the bobbin housing.  <u>Reset the safety.</u>	
Thread comes out of the tensioners	The thread around the check spring disk isn't pulled up until it clicks.	Re-thread the machine with the presser foot raised to take tension off during threading. See <u>Critical Threading</u>	
	The check spring disk may be loose.	Make a maintenance request at <a href="http://protohaven.org/maintenance">http://protohaven.org/maintenance</a> and notify the tech on duty.	
Missed stitches	The needle is inserted improperly.	Be sure that the scarf is to the right	
	The needle is threaded right to left	Re-thread left to right	
	The needle is bent or broken	Replace the needle	

Loud noise while winding the bobbin	The presser foot is down.	Use the manual lever to pick it up. Unthread the needle, (preferable take it out) be sure nothing can roll towards the drive shaft.	
Thread seems stuck—can't pull stitched fabric away from the presser foot after sewing the seam.	The tensioners are not disengaged	Push the knee pedal HARD to the right to disengage the tension.	

# Special Setups

## CHECK SPRING

The Check Spring is used to alter the amount of thread being pulled away from the thread spool above, used for very small or very large stitches or very thick material..

To adjust the stroke of the check spring, please make a Special Setup Arrangement with a Protohaven Staff Member to gain clearance in advance of use.

# Additional Resources

## HOW-TO GUIDES

[Machine Manual](#)

[Visual chart of needle types](#)

[Threading the machine](#)

Juki Walking foot overview:

[www.youtube.com/watch?v=qfXDo4xr-FU](http://www.youtube.com/watch?v=qfXDo4xr-FU)

[www.youtube.com/watch?v=cr2VmyJDZfk](http://www.youtube.com/watch?v=cr2VmyJDZfk)

## Common errors

How to thread and oil the Juki walking foot:

[www.youtube.com/watch?v=aaNsmgHQzTo&t=31s](http://www.youtube.com/watch?v=aaNsmgHQzTo&t=31s)

[www.youtube.com/watch?v=Y1ZYwIwYRC0&t=2s](http://www.youtube.com/watch?v=Y1ZYwIwYRC0&t=2s)

Sewing Gold Channel: Operating videos on many machine models, and how-to's on sewing a range of fabrics

Ageberry - How to choose thread

# Regular Maintenance

TODO: Sort into maintenance books

## Lubrication

- Faceplate, [manual p. 15](#)
- Top plate, [manual p. 16](#)
- Hook, [manual p. 17](#)
  
- [Video Part 1](#)
- <https://www.youtube.com/watch?v=onPC3g70KZM>

[youtube.com/user/TRADERnel](http://youtube.com/user/TRADERnel)

## Safety Clutch Release

- Resetting the Safety Clutch, [manual p. 43](#)
- [Releasing the safety clutch video](#)
- [Hook disassembly for jams or broken needle video](#)

## Adjusting the Check Spring

The check spring must always be taut so that it naturally bounces back. If the nut has been loosened, and the spring is not pulling back down, it must be reset.

- Adjusting the thread take-up spring, [manual p. 28](#)
  - [Check spring adjustments, video](#)
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Revision #6

Created 7 January 2025 22:14:18 by Paul Mazaitis

Updated 11 May 2026 20:14:53 by Bookstack Admin